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| 10/509,290 | 06/20/2005 | Jas Pal Singh Badyal | 42965-P041US | 2188 |

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| EXAMINER | |
|---|---|
| PADGETT, MARIANNE L | |
| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/509,290 | BADYAL ET AL. | |
| | Examiner | Art Unit | |
| | MARIANNE L. PADGETT | 1792 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *9/23/2004 & 6/20/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7 and 8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *4-6 and 9-23* are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/23/4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The examiner notes that applicants submitted a **preliminary amendment** dated 9/23/2004, where both page 2 of the preliminary amendment paper & the transmittal paper indicate that a **substitute specification** (& markup copy) was supposed to be present, however on reviewing every paper in the electronic application file, the examiner cannot find any substitute specification or markup copy, & the only complete "specification" found in the patent file appears to be that derived from the PCT document, as there is no section heading on page 1, entitled the "Field of the Invention". Note for this reason the "Cross-Reference to Related Applications" section directed to be inserted on the separate amendment sheet cannot be entered. The examiner notes that the WO document & the United Kingdom priority document are both present, however are clearly the documents that they are labeled to be, so have not been mixed up with the substitute specification.

The **disclosure** is **objected** to because of the following informalities: for reasons as stated above, the corrections as alleged to have been made by applicants, cannot be reviewed by the examiner & remained needed/appropriate. The examiner will further review the specification for informalities when the substitute specification & markup copy are available for review.

Appropriate correction is required.

2. **Claim 4-6 & 9-23** are **objected** to under **37 CFR 1.75(c)** as being in **improper form** because a **multiple dependent** claim should refer to claim numbers in the alternative &/or cannot part dependent from preceding multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims 4-6 & 9-23 have not been further treated on the merits.

In review of the transmittal letter & 9/23/2004 preliminary amendment, the examiner finds no indication that applicants had intended to amend these claims to put them in proper form for examination by the USPTO. Note that claims 1-3 & 7-8 which are in proper form for examination, may be considered election by original presentation.

3. Applicants' IDS statement & PTO-1449 of 9/23/2004 is made of record, with it noted that USPN 5,971,505 is to the inventor Zamora (as opposed to Phillips et al. as listed on the PTO-1449) & not relevant to the present case.

4. **Claims 1-3 & 7-8** are rejected under **35 U.S.C. 112, second** paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent **claim 1**, the requirement of "exposing the substrate to any, or any combination of, at least two treatment steps..." is of uncertain meaning, as it is uncertain exactly how many different combinations applicants are actually claiming or including with this phrase, however considering the broadest possible meanings, this phrasing would seem to encompass doing any single option twice or combining any option with any other option, including the options within the two main options. It is also uncertain in independent claim 1 exactly what is meant by "the exterior and internal surfaces", since the claimed substrate has no particular shape, configuration or structure, let alone any that can be necessarily defined as internal or external, thus it is uncertain if this is an indication that the substrate is intended to be hollow, or is intended to have at least two sides which could be labeled exterior & internal, such as a lens which has a definite front and back (i.e. exterior & internal), or is intended to be porous, or what. Also in the **(ii)** step, it is uncertain if "of/onto the crosslinked material" only modifies "plasma deposition", or is also intended to modify "plasma modification". Furthermore, "the cross-linked material" lacks proper antecedent basis, since whether or not any crosslinking is performed is optional (i.e. as what combination of treatment steps is optional, thus no necessary crosslinking need occur), & since no "material" has been introduced by itself, although the preamble uses "material" as adjective for substrate, but not by itself as a noun.

In **claim 2** it is unclear whether a particular sequence is intended to be required, i.e. step (i) then step (ii), or if these two steps may be performed in any order, as long as one follows in sequence after the other. Therefore as written this claim is ambiguous.

In **claims 3 & 7**, "the precursor gas" lacks any antecedent basis, as no precursor gas (or precursor or gas) has been previously introduced in independent claim 1. Also, it is unclear what the difference between "noble gas" & "inert gas" is intended to be, as these are synonyms for the last col. of the periodic table & nothing in applicants' specification provided any differentiating definition, hence for purposes of examination they will be treated as identical. Note, if applicant means -- nonreactive -- when using the term "inert gas", this would be a relative term lacking clear metes and bounds, unless what it is not reactive with is defined. It is also noted that calling a noble or inert gas a precursor gas does not make much sense, since it is unclear for what a gas, which basically is not reactive, is a precursor.

Also in **claim 7**, the reference to "step 2 (ii)" has no actual relationship to any claim step, as there is no "step 2", with or without "(ii)", ever used in independent claim 1. For purposes of examination, the examiner will be assumed that step (ii) was intended & treat this limitation accordingly.

5. The following is a quotation of the appropriate paragraphs of **35 U.S.C. 102** that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The **nonstatutory double patenting** rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. **Claims 1-2 & 7** are **provisionally** rejected on the ground of **nonstatutory obviousness-type double patenting** as being unpatentable over claims 1-2 & 13-15 of copending Application No. **10/509,295**. Although the conflicting claims are not identical, they are not patentably distinct from each other because these two sets of application claims, in their multiplicity of possible combinations of steps, are directed to overlapping sequences of steps, and as such may be considered to encompass obvious variations of each other. Specifically, copending (295) includes the option of plasma depositing their claimed applied polymer coating, where that coating may be applied with fluorinated species, and where

the option of disposing the coated substrate in the plasma after coating is a possibility (i.e. plasma curing), as is the curing of the fluorinated surface affecting the crosslinking of the underlying substrate, thus overlapping with possible options of the present claims, hence lacking clear distinction therefrom.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. **Claims 1-3 & 7** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Seki et al.** (JP 03-14677).

As discussed in the English abstract, Seki et al. disclose a sequence of plasma steps treating a fibrous substrate material with a low temperature gas plasma, where the gas may be fluorine containing $C_2F_4$ or $C_2F_6$ (i.e. a fluoride), in order to deposit a polymer film on the fibrous material. Thereafter, the polymer film is treated with a non-polymerizable gas (e.g. Ar, He, etc.) to crosslink the plasma deposited film.

8. **Claims 1-3 & 7-8** are rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-19 & 24 of U.S. Patent No. **6,551,950 B1** (Badyal et al.), in view of **Seki et al.** ((JP) discussed above in section 7).

The Badyal et al. (950) patent's claims overlap with options of the current claims by plasma depositing a polymer layer on a substrate inclusive of polymeric materials, fabric, etc., which polymer layer may be formed from a fluoride containing gas, using a pulsed plasma techniques, which may employ a high-frequency voltage, thus encompasses either RF frequency or microwaves, and being pulsed can be considered non-equilibrium as it is in a constant state of change or fluctuation. The patent claims differ from the current claims in that they do not require at least two plasma treatment steps (unless one considers each plasma pulse to be a plasma deposition of crosslinked material step, in which case it reads on claims 1, 3 & 7-8 without any other reference), and specifically does not require a sequence of plasma treatment steps which employs both a step (i) & a step (ii) option, however as was seen above in

the disclosure of Seki et al., plasma polymerized deposition of fluorinated polymeric layers onto polymeric fiber substrates (i.e. fabrics as is claimed by in (950)), may be advantageously further plasma treated using gases, such as Ar or He, to enhance crosslinking of the polymer deposit in order to enhance bleed resistant of the dyed fiber/fabric material, which would be consistent with the desire of the (950) patented claims to form water repellent coatings surface & possible coating of fabrics, hence such further treatment of the pulsed plasma deposited halogenated/fluorinated polymer layers would've been obvious to one of ordinary skill in the art in order to insure adequate adhesion/crosslinking/bleed resistance or the like of such coating materials on fibrous polymer substrates, where routine optimization for particular polymeric materials & plasma conditions would have been expected to optimize such process.

9. **Claims 1-3 & 7-8** are rejected under 35 U.S.C. 103(a) as being obvious over **Badyal et al.** (**6,551,950 B1**), in view of **Seki et al.** (JP), discussed above in sections 7-8.

The applied reference has a common inventor (Jas Badyal) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

See discussions above in sections 7-8, also in Badyal et al. (950), see the abstract; figures 1-4; col. 2, line 65-col. 3, line 10 (non-equilibrium plasma); col. 4, lines 6-18, which discusses substrates such as particular fabrics possibly previously treated, thus consistent with dyed; col. 4, lines 19-61 for plasma conditions.

10. **Claims 1, 3 & 7-8** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Badyal et al.** (6,358,569 B1).

In Badyal et al. (569), particularly see the abstract; figure 5; col. 1, lines 3-47; col. 2, lines 33-58; col. 3, esp. lines 34-45 & 60-col. 4, lines 7 & 47-67; col. 5, esp. lines 1-12 & 36-41; and col. 6, lines 11-17 for the option of using a further cold plasma step to fluorinate the deposited plasma polymerized polymer layer using $SF_6$; and claims, particularly 1-2, 9-10 & 12-13. Note these teachings read on the claims' option of employing a combination of 2 step (ii) techniques of plasma deposition of a crosslinked material, that may employ noble gas or nitrogen in a pulsed RF plasma (i.e. non-equilibrium) & plasma modification thereof using a fluoride containing gas.

11. **Claims 1-3 & 8** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Schultz Yamasaki et al.** (6,156,394).

Schultz Yamasaki et al. teach improving the adhesion of optical coatings (e.g. plasma CVD deposited silicon nitride, etc.) on polymeric optical substrates via the exposure to electromagnetic radiation having wavelengths of about 30-350 nm, which may be performed via direct exposure to gas plasmas of He, Ar or nitrogen, and causes cross-linked bonds to form in the polymeric substrate surface, so that there is consequently improve the adhesion at the interface with the subsequently deposited coating that may be plasma deposited. The exemplary direct exposure plasma apparatus employs a microwave/RF dual frequency plasma system, where a negative DC substrate-bias voltage may be applied to cause ion bombardment from the plasma, where it's noted that this extraction of ions to bombard the surface may be considered a form of non-equilibrium plasma. Also, Schultz Yamasaki et al. teach that

other useful direct exposure plasma apparatus may include simpler or more complex systems. Particularly see the abstract; figures 4 & 6-7; col. 1, lines 5-25; col. 2, lines 1-20+; col. 3, lines 10-26; col. 4, lines 1-20+ & 40-60; col. 5, lines 37-52; col. 6, lines 13-35 (plasma/electromagnetic wave pretreatment resulting in changes in stoichiometry, increased resistance to acetone damage & cross-linked bonds on surface); col. 7, lines 15-44; col. 8, lines 11-21 & 35-50; examples, especially noting the PECVD of silicon nitride (col. 9, lines 28-39 employed in those the examples & Ex. 2, col. 10, lines 20-54; Ex. 3, col. 12, lines 20-32; Ex. 5, col. 14, lines 65-col. 15, lines 14; Ex. 6, col. 16, lines 15-32; and claims 1-5, 11-13 & 17-24.

12. **Claims 1-2 & 7** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Nguyen et al** (5,244,730).

**Nguyen et al** teach a process of plasma polarization of a fluorocarbon layer where a plasma polymerized fluorocarbon layer is deposited on the internal surfaces of the plasma chamber, exemplified by a 2-stage plasma process using carbon fluoride gases, then followed by use of the plasma chamber for war plasma polymerization deposition on substrates which causes further deposition of the plasma polymerized material on the interior surface of the chamber as well as on the substrates being processed, where the deposition process is taught to form highly cross-linked fluorocarbon films. Is further taught after sufficiently long periods of use (e.g. 10 hours) when deposited thicknesses of a fluorocarbon materials have built-up on the chamber, it is clean by oxygen plasma, that the plasma deposition coating process for internal surfaces & use is repeated. Particularly see the abstract; the figure; col. 3, lines 27-col. 4, lines 50+; col. 5, lines 57-67; col. 6, lines 7-25; an example 1 on col. 6. These teachings read on an infinite number of step (ii) plasma modifications or plasma deposition of crosslinked material onto either in the plasma cleaned chamber surface or onto cross-linked plasma deposited material, where the plasma depositions onto the plasma deposited fluorocarbon, would inherently be causing further crosslinking of the previously deposited polymeric material, thus it's also effectively inclusive of step (i) preformed both concurrently & in sequence with step (ii).

13. **Claims 1 & 3** are rejected under 35 U.S.C. **102(b)** as being clearly anticipated by **Kamel et al.** (5,326,584).

**Claim 2** is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Kamel et al.** (5,326,584).

**Claims 2 & 8** are rejected under 35 U.S.C. 103(a) as being obvious over **Kamel et al.** (5,326,584), in view of **Schultz Yamasaki et al.** (6,156,394).

Kamel et al. (abstract; column 6, lines 4-41; column 7, lines 42-68; column 8, lines 12-column 9, lines 30+; examples, e.g. Ex. I + Ex. II; and claims 1-9) teach a process of modifying the surface of polymeric substrates, such as polymeric intraocular lenses of material such as PMMA, via a sequence of plasma steps, that include initially cleaning the polymer surface via a plasma etching with RF plasma of gases that may be nitrogen or ammonia (if introduction of nitrogen is compounds is desired), or noble gases such as argon (for creation of active sites that do not produce new chemical groups). After cleaning/activation polymeric substrate, a polymeric biocompatible material may be applied via further radio frequency plasma treatment, i.e. a plasma polymerized deposit.

Kamel et al. while employing an initial nitrogen or Ar gas plasma to polymeric substrates, such as PMMA, in teaching a pretreatment activation of the surface that improves adhesion of subsequent coatings, do not discuss these plasma treatments as producing further crosslinking of the surfaces, however the energetic environment created by these in situ plasmas would have inherently produced crosslinking in surfaces such as the exemplified PMMA or alternatively taught activation to create active sites would have been reasonably expected to have been provided by optimization inclusive of such bonding rearrangements. Alternatively, Schultz Yamasaki et al., discussed above demonstrated that direct plasmas, inclusive of nitrogen plasmas & Ar plasmas, as well as He plasmas, when used to treat PMMA substrates cause crosslinking thereof, which provides improved adhesion for subsequent plasma deposited coatings, thus it would've been obvious to one of ordinary skill in the art to optimization of the plasma

pretreatments of Kamel et al. (including use of suggested plasma apparatus structures/techniques) to effect such crosslinking of polymeric optical lens surfaces, as treated by both references, in order to provide the advantages of improved at adhesion of subsequent plasma deposited coatings desired by both references, with the advantage of good optical quality also desired in both references.

14. Applicants' and extremely broad & alternative claims may be said to read on a large variety of different plasma processing steps, however at present while many more rejections could be made, they are superfluous in view of already applied rejections & a multiplicity of options which may be considered.

15. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/
Primary Examiner, Art Unit 1792

MLP/dictation software

9/26-27/2008